

CLAIMS

1. A recombinant antigen recognizing construct specifically and/or selectively binding to a DCAF4L2 peptide with an amino acid sequence according to SEQ ID NO: 49, wherein the antigen recognizing construct comprises the complementary determining regions (CDRs)
 - (i) CDR1 according to SEQ ID NO: 1 and CDR3 according to SEQ ID NO: 3; and CDR1 according to SEQ ID NO: 7 and CDR3 according to SEQ ID NO: 9; or
 - (ii) CDR1 according to SEQ ID NO: 13 and CDR3 according to SEQ ID NO: 15; and CDR1 according to SEQ ID NO: 19 and CDR3 according to SEQ ID NO: 21; or
 - (iii) CDR1 according to SEQ ID NO: 25 and CDR3 according to SEQ ID NO: 27; and CDR1 according to SEQ ID NO: 31 and CDR3 according to SEQ ID NO: 33;and wherein said antigen recognizing construct comprises the respective CDR amino acid sequences with not more than one or two amino acid modification wherein said amino acid modification is selected from the group of insertion, deletion or substitution.
2. The antigen-recognizing construct according to claim 1, further comprising a CDR 2 sequence according to SEQ ID NO: 2 and SEQ ID NO: 8, SEQ ID NO: 14 and SEQ ID NO: 20, or SEQ ID NO: 26 and SEQ ID NO: 32.
3. The antigen recognizing construct according to claim 1 or 2, wherein the antigen recognizing construct is an antibody, or a T cell receptor (TCR).
4. The antigen recognizing construct according to claim 3, wherein the antibody is a bispecific antibody, a diabody, a scFv fragment, a chimeric antibody receptor (CAR) construct or a minibody.
5. The antigen recognizing construct according to any of claims 1 to 4, comprising a TCR alpha variable chain region and a TCR beta variable chain region,
 - (i) wherein said TCR alpha variable chain region has the amino acid sequence of SEQ ID NO: 4; or an amino acid sequence having at least 90% identity to SEQ ID NO: 4 and wherein the TCR alpha variable chain region comprises the CDR1, CDR2 and CDR3 amino acid sequences of SEQ ID NO: 1, 2 and 3;

and wherein said TCR beta variable chain region has the amino acid sequence of SEQ ID NO: 10; or an amino acid sequence having at least 90% identity to SEQ ID NO: 10 and wherein the TCR beta variable chain region comprises the CDR1, CDR2 and CDR3 amino acid sequences of SEQ ID NO: 7, 8 and 9; or

- (ii) wherein said TCR alpha variable chain region has the amino acid sequence of SEQ ID NO: 16; or an amino acid sequence having at least 90% identity to SEQ ID NO: 16 and wherein the TCR alpha variable chain region comprises the CDR1, CDR2 and CDR3 amino acid sequences of SEQ ID NO: 13, 14 and 15; and

wherein said TCR beta variable chain region has the amino acid sequence of SEQ ID NO: 22; or an amino acid sequence having at least 90% identity to SEQ ID NO: 22 and wherein the TCR beta variable chain region comprises the CDR1, CDR2 and CDR3 amino acid sequences of SEQ ID NO: 19, 20 and 21; or

- (iii) wherein said TCR alpha variable chain region has the amino acid sequence of SEQ ID NO: 28; or an amino acid sequence having at least 90% identity to SEQ ID NO: 28 and wherein the TCR alpha variable chain region comprises the CDR1, CDR2 and CDR3 amino acid sequences of SEQ ID NO: 25, 26 and 27; and

wherein said TCR beta variable chain region has the amino acid sequence of SEQ ID NO: 34; or an amino acid sequence having at least 90% identity to SEQ ID NO: 34 and wherein the TCR beta variable chain region comprises the CDR1, CDR2 and CDR3 amino acid sequences of SEQ ID NO: 31, 32 and 33.

6. The antigen recognizing construct according to any one of claims 1-5, wherein the antigen recognizing construct is

- (i) a TCR and comprises a TCR alpha variable chain and a TCR beta variable chain or a TCR gamma variable chain and a TCR delta variable chain;
- (ii) a TCR comprising a TCR alpha chain and TCR beta chain, further comprising a constant region having at least 50%, 60%, 70%, 80%, 90%, 95%, 98%, 99% or 100% sequence identity to an amino acid selected from SEQ ID NO: 5 and 11; 17 and 23; and 29 and 35; or
- (iii) a single chain TCR (scTCR).

7. A vector comprising a nucleic acid encoding the antigen recognizing construct according

to any one of claims 1-6.

8. A host cell comprising an antigen recognizing construct according to any one of claims 1 to 6, or a vector according to claim 7, preferably a lymphocyte, preferably a T lymphocyte or T lymphocyte progenitor, more preferably a CD4 or CD8 positive T-cell, even more preferably a T cell that is a gamma/delta T cell.
9. A pharmaceutical composition comprising the antigen recognizing construct according to any of claims 1 to 6, or the vector according to claim 7, or the host cell according to claim 8, and a pharmaceutical acceptable carrier, stabilizer and/or excipient.
10. The antigen recognizing construct according to any one of claims 1 to 6, or a vector according to claim 7, or a host cell according to claim 8, or the pharmaceutical composition according to claim 9, for use in medicine.
11. Use of the antigen recognizing construct according to any one of claims 1 to 6, or a vector according to claim 7, or a host cell according to claim 8, or the pharmaceutical composition according to claim 9 for the manufacture of a medicament for the treatment of a proliferative disease characterized by the expression of DCAF4L2.
12. The antigen recognizing construct according to any one of claims 1 to 6, or a vector according to claim 7, or a host cell according to claim 8, or the pharmaceutical composition according to claim 9 for use in the diagnosis, prevention, and/or treatment of a proliferative disease, in particular cancer, wherein said cancer preferably is selected from non-small cell lung cancer, small cell lung cancer, renal cell cancer, brain cancer, gastric cancer, colorectal cancer, hepatocellular cancer, head and neck cancer, pancreatic cancer, prostate cancer, leukemia, breast cancer, Merkel cell carcinoma, melanoma, ovarian cancer, urinary bladder cancer, uterine cancer, gallbladder and bile duct cancer, esophageal cancer, or a combination thereof.
13. Use of the antigen recognizing construct according to any one of claims 1 to 6, or a vector according to claim 7, or a host cell according to claim 8, or the pharmaceutical composition according to claim 9 for the manufacture of a medicament for the diagnosis, prevention, and/or treatment of a proliferative disease characterized by the expression of DCAF4L2, in particular cancer, wherein said cancer preferably is selected from non-small cell lung cancer, small cell lung cancer, renal cell cancer, brain cancer, gastric

cancer, colorectal cancer, hepatocellular cancer, head and neck cancer, pancreatic cancer, prostate cancer, leukemia, breast cancer, Merkel cell carcinoma, melanoma, ovarian cancer, urinary bladder cancer, uterine cancer, gallbladder and bile duct cancer, esophageal cancer, or a combination thereof.

14. The antigen recognizing construct according to any one of claims 1 to 6, or a vector according to claim 7, or a host cell according to claim 8, or the pharmaceutical composition according to claim 9 for use in the treatment of a proliferative disease in a subject characterized by the expression of DCAF4L2.
15. Use of antigen recognizing construct according to any one of claims 1 to 6, or a vector according to claim 7, or a host cell according to claim 8, or the pharmaceutical composition according to claim 9 in the manufacture of a medicament for the treatment of a proliferative disease in a subject characterized by the expression of DCAF4L2.
16. The use according to claim 15, wherein the proliferative disease characterized by the expression of DCAF4L2 is cancer, preferably selected from non-small cell lung cancer, small cell lung cancer, renal cell cancer, brain cancer, gastric cancer, colorectal cancer, hepatocellular cancer, head and neck cancer, pancreatic cancer, prostate cancer, leukemia, breast cancer, Merkel cell carcinoma, melanoma, ovarian cancer, urinary bladder cancer, uterine cancer, gallbladder and bile duct cancer, esophageal cancer, or a combination thereof.
17. A method of detecting cancer expressing DCAF4L2 in a biological sample comprising:
 - (a) contacting the biological sample with the TCR of any of claims 3 to 6,
 - and
 - (b) detecting binding of the TCR to the biological sample
 wherein preferably the TCR comprises a detectable label, wherein preferably the detectable label is selected from the group consisting of a radionuclide, a fluorophore and biotin.
18. The method of claim 17, wherein said detecting is carried out *in vitro*, *in vivo* or *in situ*.
19. The method of any of claims 17 to 18, wherein said cancer expressing DCAF4L2 is non-small cell lung cancer, small cell lung cancer, renal cell cancer, brain cancer, gastric cancer, colorectal cancer, hepatocellular cancer, head and neck cancer, pancreatic cancer,

prostate cancer, leukemia, breast cancer, Merkel cell carcinoma, melanoma, ovarian cancer, urinary bladder cancer, uterine cancer, gallbladder and bile duct cancer, esophageal cancer, or a combination thereof.

20. The antigen recognizing construct of any of claims 3 to 5, which is a TCR, wherein

- (i) said TCR is a soluble TCR;
- (ii) the alpha chain comprises a TCR alpha variable domain at least 95% identical to the amino acid sequence of SEQ ID NO: 4; and the beta chain comprises a TCR beta variable domain at least 95% identical to SEQ ID NO: 10, and wherein the TCR specifically binds to a TAA-peptide MHC molecule complex;
- (iii) the TCR has at least one mutation in the alpha chain relative to SEQ ID NO: 4 and/or has at least one mutation in the beta chain relative to SEQ ID NO: 10, and wherein said TCR has a binding affinity for, and/or a binding half-life for a TAA peptide-HLA molecule complex, which is at least double that of the unmutated TCR for the same peptide; or
- (iv) the TCR has at least one mutation in the alpha chain relative to SEQ ID NO: 4 and/or has at least one mutation in the beta chain relative to SEQ ID NO: 10, and wherein the TCR has modified glycosylation compared to the unmutated TCR.

21. A TCR comprising at least one alpha chain complementarity determining region (CDR) selected from the group consisting of an alpha chain CDR I, CDR2 and CDR3 of SEQ ID NO: 4 and/or at least one beta chain complementarity determining region (CDR) selected from the group consisting of a beta chain CDR I, CDR2 and CDR3 of SEQ ID NO: 10, and wherein the TCR specifically binds to a DCAF4L2 peptide-MHC molecule complex, wherein the DCAF4L2 peptide consists of an amino acid sequence according to SEQ ID NO: 49.